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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,630	02/02/2004	Xi Shen	BYD-02	1590
33139	7590	10/03/2006	EXAMINER	
EMIL CHANG LAW OFFICES OF EMIL CHANG 874 JASMINE DRIVE SUNNYDALE, CA 94086			KALAFUT, STEPHEN J	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/770,630

Applicant(s)

SHEN ET AL.

Examiner

Stephen J. Kalafut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 20-22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02 Feb 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

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Claims 3, 7, 8, 12, 16, 17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 3 or its parent claim 1, there is no antecedent for "said clamp case". Should claim 3 instead depend from claim 2? In claims 7, 8, 16 and 17, the term "high temperature" would have indefinite scope, since the claims and specification do not indicate any values for the term "high". In claims 12 and 21, the term "middle-phase" is not recognized in the art, but appears to be a mistranslation of "meso-phase". The term "tiny ball" is unclear. Should this be "spherical particles"?

Claims 20-22 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 11-13, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Were claims 20-22 intended to be dependent on claim 14?

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* (US 6,844,109) in view of Kaneta (US 7,029,789) and Clarke (US 4,646,430).

Xing *et al.* disclose a stacked-type lithium-ion rechargeable battery (10), comprising a battery core (12) that includes a plurality of cells (20), each with an anode (32), a cathode (22) and a separator (42). Each of the electrodes includes a respective metal current collector (26, 36), and thus a “plate” having a main body portion and a thin elongated part (28, 38) extending therefrom. The battery also includes a case (14) that secures the core. These claims differ from Xing *et al.* by reciting that the elongated parts extend from opposite ends, and that sets of like polarity elongated parts are held by clips that connect to terminals. Kaneta discloses a stack of flat cells that include like polarity electrode tabs connected to respective terminals (4, 5) that extend in opposite directions (figures 1 and 2). These allow for the connection of plural stacks of cells in series (figures 10a-10d) or parallel (figure 11), in various straight or folded arrangements (figures 12a-17). Because of this flexibility in making connections, it would be obvious to place the opposite connector tabs and terminals of Xing *et al.* on opposite ends of the cells as shown by Kaneta. Clarke discloses clips (21, 24, 26) used to connect like polarity electrode tabs to a terminal. Because of the convenience afforded by such clips (column 1, lines 58-63) and because of the relative ease of disassembly if the battery is taken apart, it would be obvious to use the clips of Clarke to connect the like polarity tabs to the respective terminals of Xing *et al.* The anodes of Xing *et al.* may comprise carbon (column 3, lines 40-41). Selection of an appropriate type thereof would be within the skill of the artisan.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta and Clarke as applied to claim 1 above, and further in view of Kaneta (US 2003/0124416).

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This claim differs from the above combination by reciting that the case is a box-type structure with two open ends, and a bolt for tightening the case. Kaneta '416 discloses a case (11) for a flat battery cell (16), which may be held together by screws and nuts (section 0019). Because of the mechanical strength afforded thereby, it would be obvious to enclose the stack of cells disclosed by Xing *et al.*, modified according to the teachings of Kaneta '789 and Clarke, in a case as shown by Kaneta '416.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta '789, Clarke and Kaneta '416 as applied to claim 2 above, and further in view of either Wyser (US 6,232,015) or Kelemen (US 6,248,472).

This claim differs from the above combination by reciting that the clamp case is made of stainless steel, copper or aluminum, and has concave imprints in the outside. Wyser discloses a battery case made of aluminum (column 4, lines 7-10) and having concave imprints (figures 3 and 6). Kelemen discloses a battery case made of steel (column 2, lines 61-62) and having concave imprints (figures 1, 3, 4 and 9). Selection of an appropriate type of steel or other appropriate metal would be within the skill of the artisan. Because of the additional strength afforded by the metal material and concave portions disclosed by Wyser or Kelemen, it would be obvious to use these to form the battery case of Kaneta '416, used to house the cell stack of Xing *et al.*, modified according to the teachings of Kaneta '789 and Clarke.

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Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta '789 and Clarke as applied to claim 1 above, and further in view of Rodriguez *et al.* (US 5,667,909).

This claim differs from the above combination by reciting a bag-shaped separator with one opening, into which one of the two electrodes is inserted. Rodriguez *et al.* disclose a bag-shaped separator (42) into which cathodes are inserted. The separator is folded to accommodate a plurality of cathodes. Because the cell stack of Xing *et al.* includes a plurality of cathodes, and because of the convenience of using one separator to accommodate this plurality, it would be obvious to use the separator of Rodriguez *et al.* in the cell stack of Xing *et al.*, the battery thereof also modified according to the teachings of Kaneta '789 and Clarke.

Claims 5, 6, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta '789 and Clarke as applied to claim 1 above, and further in view of Biegger (US 4,879,187).

These claims differ from the above combination by reciting a section of at least one of the conducting tabs that has a higher resistance than the rest, such as by having a smaller cross-sectional area, where the section may break upon short circuit or increase resistance upon high temperature. Biegger discloses an electrode conductor (2) that includes a section (6) that is narrower than the rest, thus having a smaller cross sectional area, and which upon excessive current will break the connection (column 5, lines 41-45). Such excessive current would be caused by a short circuit. Since the tab may burn (column 5, line 44), it would also be responsive to excess temperature. To obtain the safety provided thereby, it would be obvious to provide the

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narrow conductor section of Biegger within the current conductive tabs of Xing *et al.*, the battery thereof also modified according to the teachings of Kaneta '789 and Clarke. Xing *et al.* also disclose bands (50) of material that would be relatively resistant to high temperature around their current conductors.

Claims 11, 13, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta '789 and Clarke as applied to claim 1 above, and further in view of Yamaura *et al.* (US 6,426,164).

These claims differ from the above combination by reciting cathode and electrolyte materials for lithium ion batteries. Yamaura *et al.* discloses the cathode material Li_xMO_2 , where M is at least Ni or Co, which would thus correspond to the present $\text{Li}_x\text{N}_{1-y}\text{Co}_y\text{O}_2$ (column 1, lines 64-66), and various electrolyte salt (column 3, lines 63-67) and solvents (column 4, lines 1-14). Because these are intended for lithium ion cells (column 1, lines 12-13), the same type disclosed by Xing *et al.*, it would be obvious to use the cathode and electrolyte materials of Yamaura *et al.* in the battery of Xing *et al.*, also modified according to the teachings of Kaneta '789 and Clarke.

Claims 14, 15, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing *et al.* in view of Kaneta '789, Clarke and Kaneta '416 as applied to claim 2 above, and further in view of Biegger.

These claims recite the same details as claims 1 and 2, and add the details of claims 5, 6, 9 and 10. The references are thus all applied for the same reasons as above. For the same reasons stated above, it would be obvious to place the opposite connector tabs and terminals of

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Xing *et al.* on opposite ends of the cells as shown by Kaneta '789, to use the clips of Clarke to connect the like polarity tabs to the respective terminals of Xing *et al.*, to use a case as shown by Kaneta '416 to enclose the cells of Xing *et al.*, and to provide the narrow conductor section of Bieggar within the current conductive tabs of Xing *et al.*

Claim 7, 8, 16 and 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art does not disclose a battery with a section of a conductive electrode tab that includes a coating of a material that reacts with the tab during high temperature to increase the resistance of the tab.

The disclosure is objected to because of the following informalities: The numeral 12 appears to indicate two different items in each of figures 2 and 3. The numeral 18, in figure 4, does not appear in the specification. Appropriate correction is required.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Robinson (US 2,631,180) discloses a stack of cells with opposite current collecting tabs extending in opposite directions. Kitoh *et al.* (US 6,379,840) disclose a battery in which conductive tabs are attached to a post by clamping (figure 1).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjk



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